

Material Safety Data Sheet

Prusament PVB by Prusa Polymers

conforms to Regulation EC No. 1907/2006 (REACH)

Revision date: 12.11. 2020

1. Identification of the substance and the company

Product name: Prusament PVB, all colours
Chemical name: Polyvinyl butyral
Chemical family: Thermoplastic
Application: filaments for FDM 3D printing
Manufacturer/Supplier:

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2. Hazard Identification

2.1. Classification of substance or mixture

Classification: **Not classified as hazardous in compliance with Regulation (EC) 1272/2008**

Hazard summary: **Dusts may irritate the respiratory tract, skin and eyes. Exposed individuals may experience eye tearing, redness, and discomfort. Liberated dust may irritate the throat and respiratory system and cause coughing. Prolonged contact may cause dryness of the skin. May form explosive dust-air mixture if dispersed.**

2.2. Label elements

Symbols/Pictograms: **None**

Signal Words: **None**

Hazard statement: **None**

Precautionary statement: **None**

Precautionary statements: Prevention: Use personal protective equipment as required.

Response: No specific first aid measures noted.

Storage: Store in a dry area. Store in a closed container. Store away from incompatible materials.

Disposal: Dispose of waste and residues in accordance with local authority requirements

2.3. Other hazards

Fine particles may form explosive mixtures with air (very unlikely during 3D printing) . Prevent dust accumulation to minimize explosion hazard. This material does not ignite easily; however, feasible precautions against dust explosion are recommended. This substance does not meet vPvB / PBT criteria of Regulation (EC) No 1907/2006, Annex XIII.

3. Composition and information on ingredients

3.1. Main substance of solid polymer:

Chemical name: **PVB (Polyvinyl butyral)**

CAS number: **63148-65-2**

Content of PVB in mixture >99%

Other additives and pigments ~1%

Other information:

This material can generate Particulates Not Otherwise Classifiable (PNOC). The Occupational Safety and Health Administration (OSHA) PEL/TWA for PNOC is 15 mg/m³ for total dust and 5 mg/m³ for the respirable fraction. The American Conference of Governmental Industrial Hygienists (ACGIH) TLV/TWA for PNOC is 10 mg/m³ for inhalable particulates and 3 mg/m³ for respirable particulates.

4. First aid measures

4.1. Description of first aid measures

We are not expected hazards under normal conditions and correct usage. If you feel unwell, seek medical advice (show the label where possible).

Eye contact: Do not rub eyes. Rinse with water. Get medical attention if irritation develops and persists.

Skin contact: After contact with hot polymer cool skin rapidly with cold water. Call a doctor if necessary. Wash off with soap and water. Get medical attention if irritation develops and persists.

Inhalation: If dust from the material is inhaled, remove the affected person immediately to fresh air. Call a physician if symptoms develop or persist.

Ingestion: Rinse mouth. If ingestion of a large amount does occur, call a poison control centre immediately.

4.2. Most important symptoms and effects, both acute and delayed

Contact with dust: Irritation of eyes and mucous membranes. Coughing.

5. Firefighting measures

General fire hazards: **The product may form dust and can accumulate electrostatic charges, which may cause an electrical spark (ignition source). Use proper grounding procedures.**

5.1. Extinguishing media

Suitable extinguishing media: Water fog. Foam. Dry powder. Carbon dioxide (CO₂). Apply extinguishing media carefully to avoid creating airborne dust. Use fire-extinguishing media appropriate for surrounding materials.

Unsuitable extinguishing media: Do not use a solid water stream as it may scatter and spread fire.

5.2. Special hazards arising from the substance or mixture

Avoid generating dust; fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard (very unlikely during 3D printing). During fire, gases hazardous to health may be formed.

5.3. Advice for firefighters

Wear positive-pressure self-contained breathing apparatus (SCBA) and protective firefighting clothing (includes firefighting helmet, coat, trousers, boots, and gloves). Avoid contact with this material during firefighting operations. If contact is likely, change to full chemical resistant firefighting clothing with self-contained breathing apparatus.

Under fire conditions: Cool containers / tanks with water spray. Water mist may be used to cool closed containers. Fine dust dispersed in air may ignite. Risks of ignition followed by flame propagation or secondary explosions shall be prevented by avoiding accumulation of dust, e.g. on floors and ledges.

6. Accidental release measures

6.1. Personal precautions

- Use personal protective equipment as required
- Avoid contact with skin and eyes
- Remove all sources of ignition
- Sweep up to prevent slipping hazard
- Use with recommended personal protective equipment (see Section 8).

6.2. Environmental precautions

- Do not allow material to contaminate groundwater system
- Do not flush into surface water or sanitary sewer system
- Should not be released into environment
- Environmental manager must be informed of all releases.

6.3. Methods and material for containment and cleaning up

- Avoid dust formation. Collect dust or particulates using a vacuum cleaner with a HEPA filter. Do not use compressed air when cleaning.
- For personal protection, see section 8 of the SDS. For waste disposal, see section 13 of the SDS.

7. Handling and storage

7.1. Precautions for safe handling

- Avoid contact with skin and eyes
- Minimise dust generation and accumulation.
- Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
- Low hazard for usual industrial or commercial handling
- Users should be protected from the possibility of contact with molten material
- Use sufficient ventilation at the workplace, if you can smell atypical odour in the workspace your ventilation is not sufficient enough.
- Flammable product

7.2. Conditions for safe storage, including any incompatibilities

- Store in a well-ventilated place in the original container protected from excessive heat, direct sunlight, dust and condensed water.
- Store away from incompatible materials (see Section 10 of the SDS).
- Protect from moisture, product can be hygroscopic, Store in a cool dry place 5-30 °C.
- If you do not need filament for a longer period of time, insert it back into the container with attached silica gel.
- Use within 1 year from manufacture.
- Avoid contact with food.
- Remove all possible sources of ignition.
- Keep locked up and out of reach children.

7.3. Specific end uses

material for FDM 3D-printing

8. Exposure controls/personal protection

8.1. Control parameters:

Biological limit values: No biological exposure limits noted for the ingredient(s)

Recommended monitoring: Follow standard monitoring procedures.

Derived no effect levels: Not available.

Predicted no effect concentrations: Not available.

8.2. Exposure controls

Appropriate engineering controls: Provide sufficient ventilation for operations causing dust formation. Explosion-proof general and local exhaust ventilation (not necessary for FDM 3D printing in normal scale – several printers). Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. If engineering measures are not sufficient to maintain concentrations of dust particulates below the OEL (occupational exposure limit), suitable respiratory protection must be worn.

8.3. Individual protection measures, such as personal protective equipment

General information: Personal protection equipment should be chosen according to the CEN standards and in discussion with the supplier of the personal protective equipment.

Eye/face protection: Risk of contact: Wear approved safety goggles.

Skin protection/Hand Protection: Wear protective gloves.

In full contact: Glove material: Nitrile rubber. Layer thickness: 0.12 mm. Breakthrough time: >=480 min.
In splash contact: Glove material: Nitril rubber Layer thickness: 0.12 mm Breakthrough time:
>=480 min.

Other: Wear suitable protective clothing. It is a good industrial hygiene practice to minimise skin contact.

Respiratory protection: In case of inadequate ventilation or risk of inhalation of dust, use suitable respiratory equipment with particle filter (type P2).

Thermal hazards: Wear appropriate thermal protective clothing, when necessary.

Hygiene measures: Handle in accordance with good industrial hygiene and safety practices. Routinely wash work clothing and protective equipment to remove contaminants.

Environmental exposure controls: Contain spills and prevent releases and observe national regulations on emissions.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

Appearance:	plastic wire
Physical state:	solid
Colour:	transparent or coloured wire
Odour threshold:	not available
pH:	not available
Melting point/freezing point:	135 – 210 °C (275 – 410 °F)
Flammability:	not available
Vapour pressure:	not available
Vapour density:	not available
Solubility:	isopropylalcohol
Auto-ignition temperature:	> 380 °C (> 716 °F)
Decomposition temperature:	not available
Viscosity:	not available
Explosive properties:	not explosive
Oxidising properties:	not oxidising

9.2. Other information

Molecular formula:	(C ₄ H ₈ O.C ₄ H ₆ O ₂ .C ₂ H ₄ O) _x
Percent volatile:	< 1 % w/w

10. Stability and reactivity

Reactivity: The product is stable and non-reactive under normal conditions of use, storage and transport.

Chemical stability: Material is stable under conditions of normal use.

Possibility of hazardous reactions: No dangerous reactions known under normal use.

Conditions to avoid: Keep away from heat, sparks and open flame. Contact with incompatible materials. Minimise dust generation and accumulation.

Incompatible materials: Strong acids. Strong oxidising agents.

Hazardous decomposition products: Carbon oxides

11. Toxicological information

General information: Dusts or powder may irritate the respiratory tract, skin and eyes.

11.1. Information on likely routes of exposure

Inhalation:

Dust irritates the respiratory system, and may cause coughing and difficulties in breathing. Prolonged inhalation may be harmful.

Skin contact:

Dust may irritate skin.

Eye contact:

Dust may irritate the eyes.

Ingestion:

May cause discomfort if swallowed. However, ingestion is not likely to be a primary route of occupational exposure.

Symptoms:

Dust may irritate throat and respiratory system and cause coughing. Direct contact with eyes may cause temporary irritation.

11.2. Information on toxicological effect

Acute toxicity:

Not expected to be acutely toxic.

Skin corrosion/irritation:

Based on available data, the classification criteria are not met.

Serious eye damage/eye irritation:

Based on available data, the classification criteria are not met.

Respiratory sensitisation:

Due to partial or complete lack of data the classification is not possible.

Skin sensitisation:

Based on available data, the classification criteria are not met.

Germ cell mutagenicity:

Based on available data, the classification criteria are not met.

Carcinogenicity:

Based on available data, the classification criteria are not met.

Reproductive toxicity:

Based on available data, the classification criteria are not met.

Specific target organ toxicity - single exposure:

Based on available data, the classification criteria are not met.

Specific target organ toxicity - repeated exposure:

Based on available data, the classification criteria are not met.

Other information:

Pre-existing skin and respiratory conditions including dermatitis, asthma and chronic lung disease might be aggravated by exposure.

12. Ecological information

Bioaccumulative potential: Not expected

Persistence and degradability: Material will remain in soil when released to the environment. Insoluble in water. No significant biodegradation is expected.

Toxicity: Expected to be inert in the aquatic environment, but if ingested by waterfowl or other animals, may cause mechanically adverse effects.

Results of PBT and vPvB assessment: This substance does not meet vPvB / PBT criteria of Regulation (EC) No 1907/2006, Annex XIII.

Other adverse effects: No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal considerations

Waste treatment: Dispose of in accordance with local regulations. Should not be released into the environment. Do not contaminate ponds, waterways or ditches with chemical or used container. Do not dispose as a common household waste. Sort out as plastic waste.

Packaging: Dispose of in accordance with local regulations.

14. Transport information

The substance is not classified as dangerous for transport according to ADR/RID/IMDG/ICAO/IATA.

15. Regulatory information

This product complies with the requirements of resolution of European Parliament (WE) no. 1907/2006. Dated December 18 2006 concerning REACH.

Regulation of the European Parliament and Council Regulation (EC) No 1272/2008 on classification, labeling and packaging of substances and mixtures (CLP).

RoHS - Directive 2011/65/EU

Prusa Polymers doesn't have any information about content of hazardous substances in Prusament PVB, these substances aren't used during production of filament. No measurements and analyses have been done, but based on information given by material suppliers, it is not expected any amount of hazardous substances in levels exceeding concentration described in Directive 2011/65/EU.

16. Other information

The information presented in this Material Safety Data Sheet (MSDS) is based on our best knowledge in combination with original SDS provided by manufacturer. SDS contains information on safety use, storage and disposal.

Abbreviations:

REACH Registration, Evaluation, Authorisation and restriction of chemical substances

EC European Community

PBT Persistent, Bioaccumulating, Toxic

vPvB very Persistent, very Bioaccumulating

PNOC Particulates Not Otherwise Classifiable Occupational Safety and Health Administration (**OSHA**)

TWA time-weighted average

ADR European Agreement concerning the International Carriage of Dangerous Goods by Road

RID International Rule for Transport of Dangerous Substances by Railway

IMDG International Maritime Dangerous Goods Code

ICAO International Civil Aviation Organization

IATA International Air Transport Association

IARC International Agency for Research on Cancer

CEN The European Committee for Standardization

Disclaimer:

The information contained herein is given in good faith and is accurate to the best of knowledge at the date indicated above. User should consider this information only as additional. It is the user's responsibility to ensure that he is subject to no other obligations than those mentioned. No liability can be assumed for accuracy and completeness. It is the responsibility of the user to adapt the warnings to local laws and regulations. Safety information describes the product in terms of safety and can not be considered as technical information about the product.